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Measuring Global Production: Factoryless goods producers [Part of Chapter 5]

Prepared by Task Force on Global Production

Summary

The document is an extract from the draft "Guide to measuring global production", bringing together the measurement challenges of factoryless goods production. This document systematically reviews the data items needed to account for all aspects of these global production arrangements: production and international trade flows. It also reviews all possible data sources that may support their recording. Furthermore, the document provides guidance on how to distinguish factoryless goods producers from agents who merely engage in merchanting.

The Guide was developed by a Task Force to assist national accounts and balance of payments compilers with recording global production related activities in their accounts. The Task Force is chaired by Ireland and the guide has been edited by the Netherlands.

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I. Factoryless goods manufacturing (C)

1. [Similar to section 2.2 in Chapter 2 of the Guide to Measuring Global Production, the recommendations in this section have not been completely concluded.]

2. The characteristics of factoryless goods producers (FGPs) are explained in detail in Chapter 2. The measurement challenges associated with factoryless production are perhaps less related to international trade transactions. Simply stated, from a trade balance perspective, factoryless producers show a great resemblance to enterprises engaged in merchanting. On first sight, FGPs purchase goods from contract producers abroad and will subsequently resell these goods to either domestic or foreign customers. In the latter case, the related imports and exports will not show up in merchandise trade statistics and additional sources are needed to estimate related imports and exports, as discussed in the context of merchanting.

3. Where FGPs typically divert from (merchanting) traders is they are engaged in managing global production and are typically expected to be significant investors in intellectual property. Secondly they are expected to employ highly skilled employees. Product design and production chain management are typically the business functions carried out by factoryless goods producers in the global production chain.

4. This section continues with discussing the identification of factoryless goods producers. This under the precondition that such enterprises should not be represented in the national accounts as traders but instead as belonging to a special category of manufacturers, as argued in Chapter 2 of the Guide. This makes the separate identification of factoryless goods producers expedient.

A. Identifying factoryless goods producers

5. The key challenge of factoryless producers is identifying the nature of their activities and to distinguish them from trading. In Chapter 2 of the Guide it was highlighted that different activities such as factoryless goods production and trading (including branding) may be combined. This may complicate the picture and the classification of companies engaged in this mixture of global production arrangements.

6. As already indicated, a first signal helping to identify a FGP is when seemingly traders appear to be huge investors in intangible capital and generating higher than average trade margins. These relatively high trade margins encapsulate the returns to intangible capital. A complicating factor is of course that such companies may not be included in the sample of research and development (R&D) surveys, when these companies are classified as traders.

7. Manufacturers associations may be consulted to list known factoryless producers of goods, particularly when these companies are known to operate in specific industry branches in which factoryless goods producers are typically active, the most obvious being consumer electronics and semi-conductor industries. Secondly, FGPs will employ workers with above average wages per hour, so this information may serve as another indicator.

8. In a following step the financial reports of these enterprises could be examined to derive the proper estimates of their output. Additional detection methods include data comparisons and analysis involving various data sources, preferably on the basis of a single company identification number, such as:

(a) Detailed banking data on transactions in foreign currency classified as exports of goods could be compared with customs data on exports for individual

enterprises. Whenever banking data on exports of goods for an enterprise are significantly higher than customs data, it may be suspected that there is a case of factoryless production of goods (or merchanting), and the financial reports have to be further examined. However, banking data may be subject to classification problems. Time lags in recording may play a disturbing role as well;

(b) Yet another detection method is the comparison of value-added tax (VAT) data on exports with customs data on exports for individual enterprises. Whenever for a particular enterprise VAT data on exports are significantly higher than customs data, it may be suspected that there is a case of global manufacturing (or merchanting) and further research is probably required.

9. A more structural solution is to capture the FGP in the framework of enterprise surveys, preferably based on their explicit identification in the business register. Obviously, the proposed adjustments in the International Standard Industrial Classification (ISIC), as discussed in Chapter 2 of the Guide, will support this approach.

10. Recent country experiences show that questions in business surveys on offshoring the production of goods leads to satisfying results. However, the surveys necessitate a relatively large amount of specific guidance and follow-up with the respondents compared to other surveys, since the observed arrangements may even be more complicated than foreseen at the stage of survey preparation, particularly because enterprises may be engaged in several forms of global production. Enterprises may report payments to sub-contractors, however, without the corresponding sales of products abroad being observed. This may indicate the building up of inventories abroad. Preliminary country results also indicate that the difference between merchanting and factoryless production cannot always be clearly made. This issue is further discussed below.

Country case study 5.6

Identifying manufacturing services and factoryless goods production in the U.S.

The United States (U.S.) Census Bureau and the Bureau of Economic Analysis (BEA) have been studying how to classify and collect data from entities that are part of GVCs. A key element is identifying the relationship between firms that outsource the fabrication of products, while still controlling the production process, and firms that perform the processing as contract manufacturing services. Through preliminary outreach conducted by the Census Bureau, respondents appear to understand the concept of contract manufacturing services and the need for U.S. statistical agencies to collect the data. Collecting data, however, could be challenging. Some respondents indicated that they were generally unable to provide data because either accounting or production management systems did not include a searchable characteristic that would distinguish these services. To determine whether data collection can be robust, the U.S. Census Bureau and the Bureau of Economic Analysis (BEA) have added questions to their respective surveys to determine whether U.S. businesses can accurately report purchases and sales of contract manufacturing services.

Direct Investment Abroad Survey

Every five years, BEA conducts the mandatory Benchmark Survey of U.S. Direct Investment Abroad (BE-10) to track the economic activity of U.S. multinational companies and their foreign affiliates. The BE-10 benchmark survey covers the entire universe of U.S. direct investment abroad in terms of value, and is BEA's most comprehensive survey of such investment in terms of subject matter. The survey collects detailed information on the financial structure and operations of U.S. parent companies and their foreign affiliates and on the transactions and positions between the parents and their affiliates. Any U.S. person (which includes companies) that had a foreign affiliate is required to report. If the respondent is a U.S. corporation, the respondent reports transactions for the fully

consolidated U.S. domestic enterprise, which excludes foreign branches and other foreign affiliates.

To understand the activity of U.S. multinationals with respect to manufacturing services, BEA added questions on purchases and performance of contract manufacturing on the 2009 Benchmark Survey of U.S. Direct Investment Abroad for U.S. parents that are not banks (BE-10A). The questions were added to identify a group of firms engaged in manufacturing services that could be used either as a sample frame for a special survey on that topic or as a way to identify firms engaged in contract manufacturing that may be linked to data collected by the Census Bureau. A data link is performed when company identification codes from BEA files are matched to the corresponding companies in the Census Bureau files. The BE-10 survey defined contract manufacturing as "Contracting with a firm to process materials and components, including payments for fabricating, assembling, labelling, and packaging materials and components." Because BEA was trying to identify a group of firms that engaged in contract manufacturing only yes/no questions were added to the survey. The BE-10 definition was broader than the international guidelines definition of manufacturing services as processing of materials and components owned by others. However, BEA requested respondents to answer if they owned some or all of the materials used by the contract manufacturers or if they did not own the materials.

BEA is in the process of collecting data from the Benchmark Survey of Transactions in Selected Services and Intellectual Property Products with Foreign Persons (BE-120) on manufacturing services on materials and components owned by others covering processing, assembly, labelling, packing and so forth undertaken by businesses that do not own the goods concerned. Reporting by companies on the contract manufacturing questions is voluntary and initial review of these questions indicates a low response rate.

Company Organization Survey

The Company Organization Survey (COS) covers all multi-unit companies with 250 or more employees and a selection of smaller companies to support other Census surveys. Companies with less than 250 employees are only selected for the COS when administrative records indicate that the company may be undergoing organizational change and is adding or dropping establishments. The Census Bureau focuses its efforts on collecting establishment information for large companies because of their importance to the economy. The COS is conducted annually in the four years between economic censuses. The COS is designed primarily to maintain the Business Register.

Several inquiries were included in the 2011 COS to enhance the Census Bureau's understanding of the relationship between the enterprise and its establishments, business models and global economic activity. In particular, the purchase and sale of manufacturing services and the impact of domestic factoryless goods producers, firms that are integrated manufacturers in their global reach but offshore manufacturing activities and would be classified as domestic wholesale trade under current U.S. industry classification guidance, has been problematic for capturing and interpreting national economic statistics in a global economy.

In 2010, an initial test by the Census Bureau to collect more detailed information on contract manufacturing services from several large firms found that the terminology was well understood. However, most of the characteristics of the data sought, such as the value of the materials and components provided to overseas contract manufacturers, would have to be collected below the enterprise level. Based on this pretesting, the level of detail sought was reduced. A pilot test of 180 reporting units was conducted in the 2010 COS. Results from the pilot test indicate that reporters largely understood contract manufacturing

as "outsourced transformation of own product" and were able to distinguish it from simple purchases of goods for resale.

The 2011 COS included contract manufacturing inquiries on approximately 40,000 surveys. Respondents to the 2011 COS survey were asked a series of questions as to whether they operate manufacturing facilities, provide contract manufacturing services incorporating patents, trade secrets, or proprietary technology owned by the principal, or purchase contract manufacturing services incorporating patents, trade secrets, or proprietary technology owned by the respondent's company. Questions on R&D performance and revenues from royalties and license fees for the rights to use intellectual property were also included.

Responses were analyzed by the Census Bureau to determine if respondents purchased or sold manufacturing service and are engaged in factoryless production. For example, if a company has R&D conducted in the U.S., does not have foreign ownership, does not operate manufacturing facilities, but does purchase contract manufacturing services incorporating the company's own patents, trade secrets, or proprietary technology; it is likely to be classified as a factoryless goods manufacturer. Initial analysis of the results of the survey showed that the potential "factoryless" producer population is likely to be small regardless of where a bright-line may be drawn for classification purposes. There is no "simple" set of criteria that is likely to identify the factoryless producer (as of yet). Ownership and large, complex, global enterprises may have business segments that would be factoryless producers even though they would not be at the enterprise level.

In addition to the contract manufacturing questions at the company level, special inquiries have been added to the 2012 Economic Census to collect information at the establishment level. The Economic Census is the Census Bureau's most comprehensive measurement of the U.S. economy and is conducted in reference years ending in "2" or "7" and contains highly detailed industry, geographic, and product statistics. The Census Bureau directly collects data from establishments of multi-establishment businesses and larger single-establishment businesses. For establishments currently classified in the manufacturing, wholesale trade, and management of companies sectors, questions on purchases of contract manufacturing services were added. In addition, for establishments currently classified in the manufacturing sector, questions on receipts from contract manufacturing services were added.

Next Steps

The results from the BEA BE-120 survey will be available soon. Once available, BEA can evaluate whether the value of receipts and payments for contract manufacturing services can be reported along with the destination of the goods after processing. The contract manufacturing services questions on the COS enterprise level survey discussed in this case study represent initial steps in determining if further data collection is likely to be robust and if the Census Bureau can identify factoryless producers in their surveys. As a next step, the Census Bureau will evaluate the special inquiries on the 2012 Economic Census to see if information at the establishment level can better identify factoryless manufacturers and to assess whether sufficient data can be collected on the value of the manufacturing service and the associated revenue on sales of products produced by contract manufacturers.

B. Identifying borderline cases

11. FGPs may contribute in various ways to a global value chain. Two types of activities will often be combined:

(a) Research and product development, and other Intellectual Property Product (IPP) related activities;

(b) Trade related activities.

12. Again, the IPP related activities represent a critical aspect of factoryless goods producers. A key role of these companies is product development and design. Once the contract producer has handed over the manufactured product, the FGP must ensure that customers appreciate the technical features and design sufficiently to provide the factoryless producer with a reasonable return on investment in IPPs. One may say that the degree of engagement of the principal enterprise in IPP related activities indicates its involvement in the production process as a factoryless producer.

13. In addition, the factoryless producer is often carrying out trade related activities. Of course it is possible that these trading activities are handed over to a separate (affiliated) company, as illustrated by the athletics shoe example in Chapter 2 of the Guide. But this is not necessarily the case.

14. For illustrative purposes one may examine firstly a case where these activities are recorded explicitly in the national accounts. Table 5.5 presents perhaps a hypothetical example in which a company is acting as the principal that provides a contractor with IPP related services for a fee (X). The principal should not be regarded as a factoryless goods producer. Instead it is responsible for two separate stages in the global value chain:

(a) Delivery of IPP services at a value X, and;

(b) Trading, i.e. purchasing the manufactured good from the contractor at a value Y before selling it on to households in its economy for value Z. The obtained trade margin equals Z−Y.

15. The purpose of this hypothetical example is showing explicitly the values of both types of output which are inseparably combined when looking at the production activities of factoryless goods producers.

16. The contractor uses the IPP services to produce goods, combined with material inputs purchased by himself. It subsequently selis the manufactured good to the principal (Y) before the principal sells the goods on to households in its economy (for value Z).

17. The assumption is made that the contract producer pays the IPP fee and that the transaction value between contract producer and principal embodies the value of the IPP service. So the output of the principal has two components: the production of IPP related services (X), and the production of a trade service (Z−Y). Its classification in terms of ISIC depends on the relative size of both activities in terms of output value. If X is larger than (Z−Y) the company is classified under Section M (Professional, scientific and technical activities). Otherwise this company is classified under Section G (Wholesale and retail trade; repair of motor vehicles and motorcycles).

Table 5

A producer engaged in IPP and trade related activities

Supply table					**Use table**		
	Principal	Imports	Margin	Total	Principal	Consumption	Exports
Goods		Y	Z−Y	Z		Z	
Output of IPP services	X			X			X
Output of margin	(Z−Y)		−(Z−Y)	0			
Total	X+(Z−Y)	Y		Z+X	X+(Z−Y)	Z	X

18. Following the recommendations in Chapter 2 of the Guide, factoryless goods producers are considered a special kind of manufacturers and not traders. Although both companies carry out roughly the same kind of activities, the production account of a factoryless goods producer will look different from the previous example presented in Table 5, and the different kind of transactions a factoryless goods producer is involved in changes the picture. These changes reflect the supplementary management and control functions carried out by the FGP.

19. The example in Table 5 shows a case where the use of IPP in production is managed by the contract producer. In the example presented in Table 6 the principal purchases an output from a contract producer which does not include the value of IPP use. This implies that the output specifications are predetermined by the principal, which is a key feature of factoryless goods production. Please be aware that the use tables presented in tables 5, 6 and 7 do not contain a value added row entry which would expose the balance between the output and intermediate consumption of the principal.

Table 6
The production account of a factoryless goods producer

Supply table					***Use table***		
	Principal	Imports	Margin	Total	Principal	Consumption	Exports
Goods	Y	Y−X	Z−Y	Z+Y−X	Y−X	Z	
Output of IPP services				0			
Output of margin	(Z−Y)		−(Z−Y)	0			
Total	Z	Y−X	0	Z+Y−X	Z	Z	

20. The use value of the IPP is included in the value of the final good and not recorded separately. The principal's output at basic prices represents the product value including the IPP capital service (Y). The output at purchasers' prices includes also the trade margin (Z−Y).

21. Table 6 shows that the FGP purchases the output from the contract producer for a price (Y−X) that does not include the IPP services value. This transaction is recorded as intermediate consumption in the use table.

22. The remaining value added (Z−Y+X) originates from two kinds of activities of the factoryless producer: the IPP service (X), and the trade service (Z−Y). In case the trade related component dominates, one may wonder whether the company under consideration should still be classified as a factoryless goods producer. There are at least two important points to consider:

(a) When trade services dominate the net output (or value added) of the company under consideration, its identification as factoryless producer would disturb the classification proposal in Chapter 2 of the Guide as this new class will capture companies that are more engaged in trade related activities than anything else;

(b) If it is decided to classify the enterprise under trade, the IPP service will become disconnected from manufacturing. Alternatively it will be recorded as an implicit element of the trade margin. This recording creates without doubt a deficiency in the accounts. This is situation is reflected in Table 7.

Table 7
The production account of a trader

Supply table					*Use table*		
	Principal	Imports	Margin	Total	Principal	Consumption	Exports
Goods		Y−X	Z−(Y−X)	Z		Z	
Output of IPP services				0			
Output of margin	Z−(Y−X)		−Z+(Y−X)	0			
Total	Z−(Y−X)	Y−X		Z	Z−(Y−X)	Z	

23. The first argument is probably leading, since one should classify the enterprise according to its major activity, if it engages in more than one activity. Of course, this is under the condition that separate units for each of these activities cannot be identified which would enable establishing separate production accounts. This implies that for borderline cases a careful analysis of (1) IPP and (2) trade related service components of value added, or net output, is required to classify expected factoryless goods producers accordingly. When the principal is considered a FGP, its output at basic prices represents the full value of the product including the IPP service (Y), and the enterprise will be classified in a separate category under the relevant manufacturing industry according to the type of final goods produced. Again it should be emphasized that the output of the FGP reflects the entire good, including the contract producer's part, and not a trade margin.

24. When considered a trader the output of the principal represents a trade margin that implicitly includes the IPP service element (Z−(Y−X)).

25. [The section will be further elaborated with the exact coverage on FGP activities]

26. It is imaginable that factoryless goods production includes mineral mining. For example, a principal may be responsible for mineral exploration and owning the natural resource, while local contractors are responsible for mineral exploitation and related activities.

27. The required decomposition of the 'net output', i.e. all cost elements excluding the purchase of the manufactured good, in an IPP related, and a trade related, component is not straightforward. But even when the company under consideration is beyond doubt identified as a factoryless goods producer, the trade service component still has to be identified and measured for computing its output at basic prices.

28. The most important step in this decomposition is calculating the capital service of the relevant IPPs on the balance sheet of the company under examination. The size of these capital services may give a reasonable indication of whether or not the company is indeed to be classified as factoryless goods producer. The residual income element may be allocated as trade margin.

29. The concept of capital services is introduced in Chapter 20 of the SNA 2008. The capital service represents the service flow of an asset to production. Conceptually a capital service should correspond to a capital rental value. This relationship is used in the first example (Table 5) where the IPP is rented out to the contract producer and where X reflects the IPP capital service fee. Without the possibility of observing such capital related transactions, the capital service value can be derived from so-called age-efficiency and age-price profiles as used in perpetual inventory methods to calculate capital stock values and consumption of fixed capital. Ideally, perpetual inventory methods are developed in such a way that they provide fully consistent information on stock values, consumption of fixed capital and capital services. For a deeper understanding of the subject, reference is made to

the Organisation for Economic Cooperation and Development (OECD) manual on Measuring Capital.

30. A supplementary step may be analysing the quality aspects of labour input. Dedicated R&D or information and communications technology (ICT) surveys may show that substantial parts of the labour input is actually involved in IPP development and related to IPP investment on own account. Substantive shares of high educated labour will usually indicate that employees are engaged in managing production chains rather than in trading.

31. More generally, there are two important indicators that mark the presence of a factoryless goods producer. Firstly, a trade margin that encapsulates the value of IPP related services will be substantially larger than that of a pure trader. Secondly, substantive ownership of IPPs, and R&D in particular, does not match very well with purely trade related activities, and this may indicate the presence of a factoryless goods producer.

32. It is possible that a factoryless goods producer obtains the R&D services of a dedicated R&D service provider. These services could be in the form of a purchase of an R&D asset or the purchase of R&D related capital services. This does not change the nature of the factoryless goods producer. One advantage of such a situation is that IPP related asset values or capital service values can be directly observed from market transactions.

33. For 'true' borderline cases a final judgement may be complicated by variability in the outcomes of the analysis over time. This may reflect reality as the relative size of trading and factoryless goods production in total output may vary over the course of several reference periods.

Country case study 5.7

Factoryless production of furniture

A few years ago a former manufacturer of furniture, company X, closed down its production in country A. Production was transferred to various contract manufacturers all over the world. Company X remained responsible for design (the blueprints), testing of products, marketing and sale. The goods designed by company X, many of which are patented, have developed over the years. Present output includes chairs for children, other equipment for the nursery and prams.

Currently parts of the furniture and equipment are produced by contract producers all over the world according to the blue prints developed and owned by company X. Suppliers are chosen according to price, delivery reliability and quality. The different parts delivered by the suppliers are sent to logistics centres. From these logistic centres the completed product is subsequently sent to customers. Company X completely controls each of these deliveries. Almost all final output is shipped to customers outside of country A. Sales and related profits worldwide are reported in the business accounts of company X.

As recommended by ISIC Rev. 4 the NSI in country A classifies company X in its business register within retail and wholesale trade. However, determining the industry classification of a factoryless producer is not straightforward. A special feature in this case is that the raw materials as processed by the suppliers are not owned, while the produced parts as delivered to the logistics centres are under ownership of company X. The activities of the logistics centres could be regarded as industrial processing, which would make company X a manufacturer. In any case, the intellectual property embedded in the products resembles a vital part of the production chain. As shown before, trading represents only a limited part of the economic activities carried out by the factoryless producer X.

II. A review of data sources

34. This section reverses the angle of the discussion on data requirements by reviewing the main characteristics of the most important data sources available to measure various aspects of global production. Rather than providing a sequence of methodological steps, as exposed in the former section, this section reviews particularly the potential of different data sources, providing the reader with some degree of flexibility in how these data sources are used in practice. This section also discusses some of the main conditions and requirements of these data sources in order to use them effectively in the context of global production measurement.

A. Business surveys, manufacturing

35. Manufacturing surveys are typically directed at establishments with annual and sub-annual cycles. Keeping in mind that not all firms are engaged in any particular form of global production, there should be an assurance that the survey frame is comprehensive and includes such firms. In addition the sample size should be sufficient and with an effective sampling strategy, also for the purpose of simply identifying those companies engaged in any form of global production. A priori information, for example obtained from company profiling can be of assistance in identifying large companies engaged in any form of global production. Such companies would ideally be in the take-all portion of the sample. At the very least, they should be in the take-all portion of the annual survey, if such a survey is used to supplement and benchmark the quarterly survey.

36. As factoryless goods producers should, according to international guidelines at present, be classified under trade, as a special case of merchanting, they may fall outside the frame of manufacturing statistics, and are likely to be captured by trade statistics instead. It should nevertheless be emphasised that enterprises in the manufacturing industry may also be engaged in merchanting or factoryless goods production as part of their secondary output. Business surveys for the manufacturing industry are usually designed to collect information on trading activities (trade related turnover and trade related purchases of goods) in order to estimate trade margins. A split in domestic and foreign trade related sales and purchases may help to observe merchanting as secondary output.

37. So, in manufacturing surveys, there needs to be a means to identify total revenues associated with main output, aside from revenues obtained from:

(a) Carrying out processing services (i.e. processing fees) on goods subject to foreign ownership;

(b) Factoryless goods production, where the physical transformation is carried out abroad;

(c) Merchanting (as a separate category of turnover from trade).

38. Similarly, purchases of goods should preferably be subdi ided into:

(a) Intermediate goods used for main (manufacturing) output;

(b) Purchases from contract producers (under a factoryless goods production a rangement) abroad;

(c) Foreign purchases of goods subject to trade.

39. The terminology used in surveys may be a point of concern. As mentioned, processing or outsourcing more generally, is often referred to as *custom work* in surveys. As these kinds of activities have been around for some time, it is likely that most

manufacturing-based surveys would already have such a split. It can be that the wording associated with various forms of global production is cumbersome and possibly not clear to respondents and might benefit from a review.

40. It is particularly helpful if manufacturing surveys cover all purchases and sales of goods subject to each of these three global production arrangements, including sufficient detail on the characteristics of these goods (in terms of Central Product Classification). This information may help to make the required adjustments in merchandise trade statistics as discussed in the Chapter 5 of the Guide.

41. Similarly it is recommended to add questions on (changes in) inventories of material inputs and (unfinished) goods held abroad, in relation to outward processing, factoryless goods production and merchanting. Business surveys are probably the only means to obtain information on inventories held abroad. The survey design should be such that the principle of economic ownership of inventories is leading, and not the physical appearance of inventories at a certain production location, particularly in cases where there is a difference between the two observation concepts. To be more specific:

(a) Inventories held abroad (due to e.g. processing abroad, goods sent abroad for repair, merchanting), but under ownership of a domestic principle, should be recorded in the balance sheet of this principal and thus in the balance sheet of the national accounts in which this principal is resident;

(b) Reversely, inventories held domestically, but are owned by foreign principals for similar reasons, should not show up in the balance sheets of the national accounts.

B. Wholesale and retail trade surveys

42. As a first step it is advisable to profile those distributors engaged in either merchanting or factoryless goods production and make sure these companies are sufficiently covered in the survey. The size of their representation may determine whether adjustments in survey designs are required to cover the specific features of these companies appropriately.

43. As a second step it is recommended to classify those companies that are predominantly engaged in factoryless goods production under a separate class of 'traders', particularly because the businesses of these companies are very different from distribution. A future step may be classifying these companies under (a special class of) manufacturers, pending on the adoption of such recommendations in the international standards.

44. The coverage of merchanting depends on the extent to which reporting addresses foreign (trade related) purchases and sales, and inventories held abroad. Otherwise, if merchanting (or factoryless production) is considered sufficiently important, trade surveys may need to be adjusted to specifically capture purchases and sales subject to merchanting. There is probably no other source available to obtain this information. Goods subject to merchanting may remain completely unobserved in merchandise trade statistics. Sufficient detail provided in the classification of foreign purchased and sold goods is another precondition for recording the net export from merchanting in the national accounts and balance and payments.

45. The survey may also need to be adapted to capture inventories of goods held abroad, as a consequence of carrying out merchanting activities.

C. International trade in services surveys

46. International trade in commercial services surveys (SITCS) are typically enterprise-based surveys, with details on service categories and probably also on industries and geography (countries and regions). Maintaining good coverage can be challenging as firms engaged in international service transactions are not always that easy to identify. Often these surveys are smaller in terms of sample size compared to business surveys covering total domestic production activity. Links to a centralized business register with a flag for international activity, based on information obtained from other surveys, can help to keep the SITCS survey frame and the applied sampling method up to date. More generally, such registers are equally important in bringing together and validating a wider range of survey results, including those of business surveys. A quarterly survey may be supplemented with a more detailed (in particular for geography) annual survey, which may be used to benchmark the sub-annual surveys.

47. The SITCS survey may not necessarily be geared to measure aspects of global production, such as processing fees, trade margins obtained from merchanting or the IPP flows inside global production chains. Surveys may require improvement in terms of coverage and design. In doing so, it will be essential to ensure adequate coverage of both service and goods producing industries as both can be engaged in international processing and merchanting. Any profiling related to the cross-border dimension undertaken in the case of the manufacturing surveys and distributive trade's surveys as well as their survey frames would be useful in this regard.

D. Merchandise trade statistics

48. Merchandise trade statistics measure cross-border flows of goods. The national accounts/balance of payments required adjustments needed to move to a recording of international trade on the basis of ownership transfer have been discussed at detail in the Chapter 5 of the Guide, including the use of 'nature of transaction codes' derived from custom's records.

49. So-called importer-exporter registers may help combining the usually few sources available for making the adjustments in merchandise trade statistics. Such registers help to establish the link between commodity trade data and business statistics. Various countries developed importer-exporter registers which may also be linked to the centralized business register. Tying the aforementioned merchandise trade adjustments to firms in manufacturing via record linkages as well as linkages at commodity level can increase the accuracy and data confrontations and adjustments.

E. Foreign direct investment surveys

50. Foreign direct investment (FDI) surveys are also briefly discussed in Chapter 3 of the Guide. These surveys on inward and outward foreign direct investment are enterprise-based, or legal entity-based. The purpose of FDI surveys is to collect information on multinational enterprises' ownership structures. For both inward and outward FDI, it is typically possible to identify and isolate majority owned affiliates by industry. In fact, majority-owned foreign affiliates are the basis for foreign affiliate statistics.

51. Combining FDI statistics with other data sources may help to obtain a better understanding of parent-affiliate relationships in terms of their roles in global production chains, particularly when information on the nature of economic relationships (and transactions) between these affiliated companies is incomplete. For example, a majority-

owned foreign affiliate engaged in manufacturing, and a principal parent with no production plants in the domestic economy, may nevertheless report significant purchases (abroad) of raw materials and sales of final goods (abroad), which may then be assumed to be processed by the foreign affiliate.

52. Tying information from FDI statistics on ownership structures into manufacturing surveys and, or, merchandise trade data will likely necessitate the use of record linkages. To do this properly, the FDI frame is preferably connected to, or based on, the centralized business register.

F. Foreign affiliate statistics

53. Foreign affiliate statistics (FATS) contain two components: *inward* and *outward* FATS. Inward statistics on foreign affiliates represent those statistics describing the activity of foreign affiliates resident in the compiling economy. Outward statistics on foreign affiliates represent statistics describing the activity of foreign affiliates abroad controlled by the compiling economy. FATS cover both financial and non-financial industries. Variables collected within the FATS framework are e.g. turnover, value added, purchases of goods and services, R&D expenditure, personnel costs, number of employees, gross investment in tangible goods and international trade.

54. FATS requires that international trade data is somehow linked to the business or enterprise register. In this regard the FATS framework is already very valuable for improving the quality of data obtained from multinational enterprises (MNEs). Perhaps more importantly, FATS may specifically focus on trade in goods and services between affiliated companies in different countries. This part of the FATS may only be obtained by carrying out supplementary surveys.

55. The Eurostat (2007) guidelines explains that intra-group trade transactions may be subject to transfer pricing, a fact that companies are unlikely to be transparent about. Nevertheless, FATS may help to identify transfers of goods subject to processing, or IPP related intra-group transfers, particularly when dedicated supplementary surveying is done to obtain these pieces of information.

G. International data comparisons

56. For the largest and most complex enterprises the issue of data confrontations at national level are discussed in detailed in Chapter 6 of the Guide. Attuning survey designs and combining outcomes may be the obvious way to optimize coverage aspects of global producers in a concise way and at minimum cost and response burdens.

57. The increasing complexity of global production chains and MNE structures underlines the importance of international data confrontations. Such forms of cooperation may entail:

(a) Alignment of business registers. A clear initiative is the European Union framework on Modernization of European Enterprise and Trade Statistics (MEETS), a cooperation project that started in 2008 to establish an inventory on the current implementation in the member states and to prepare guidelines for a more consistent data system. One of the key features is the development of a EuroGroups register. Another important objective is to develop a methodology for measuring global value chains and linking of micro-data on international trade and business statistics. This project may not only lead to further harmonisation of register designs, units and survey designs but may particularly be helpful to address also issues related to global production;

(b) Alignment of approaches to measuring global production. There is likely a role for the international organisations on this front, for example by providing a platform for regularly exchanging methods and identifying best practices, also based on the international comparisons of country results;

(c) Alignment of international trade statistics. Several so-called mirror exercises have been carried out at bilateral or multilateral level to adjust for asymmetries in international trade statistics. Globalisation makes such analyses more relevant than ever and such exercises may particularly focus on intra-company flows of goods, services and IPPs in particular. One obstacle to such efforts is that legislation may exist in some jurisdictions that restrict the amount of information that can be exchanged with compilers in other countries. Another limitation may be that such an exercise is usually very resource demanding. Nevertheless, processes could be sought to facilitate this kind of work.

III. Conclusions and recommendations

58. The Chapter 5 of the Guide discusses the measurement aspects of goods sent abroad for processing, merchanting and factoryless goods production by reviewing the required data items and associated adjustments in source statistics. Each of these global production arrangements require adjustments and additions in existing data collection systems and the need for the changes may be amplified by the on-going globalised dispersion of production chains. Yet these measurement challenges may not easily match the on-going attempts of national statistical institutes (NSIs) to reduce costs and respondent burdens.

59. The recommendations of the Chapter 5 of the Guide are summarized as follows:

(a) One of the biggest challenges is the required adjustments in merchandise trade statistics for their use in the national accounts and the balance of payments. Sufficient detail in nature of transaction codes is often not available, nor sufficiently reliable, to make the required adjustments. In these cases it is recommended to add extra data items to business surveys, at least on annual basis, needed to observe the international flows of goods related to processing (or merchanting), preferably in close correspondence to questions about processing fees paid to, or received from, foreign companies. A particular concern is the estimation of exports of goods directly following processing. Without this information, corrections in merchandise trade statistics may be wrong and this will disturb the trade balance;

(b) It is quite possible in some countries that available customs information is not fully utilized in the merchandise trade statistics. Some of this information may already exist on available customs fields that are not fully captured or ignored for merchandise trade statistics purposes. In other words, existing but non-tabulated or analysed fields might be able to provide important information for adjustment purposes. This might involve additional efforts by compilers as well as negotiations with customs agencies for access to additional records on customs documents. The ultimate goal is to have trade declaration documents that would allow the compilation of data both on shipment of goods and economic transactions;

(c) The transactions of goods under merchanting could either be observed by making corresponding adjustments in the business statistics of wholesale traders (asking for the purchases and sales of goods under merchanting), or in the international trade in services statistics. The minimum data requirement is to measure at least the trade in services connected to merchanting;

(d) When data sources are incomplete, or insufficiently reliable, data validation is recommended by bringing together, and reconciling, the results from business surveys,

merchandise trade statistics and the international trade in services statistics, preferably on the basis of an integrated business register, and were needed at the individual enterprise level. This would be supplemented by the balancing of the supply-use tables;

(e) The value of processing fees, paid or received, should be observed from business surveys, or the international trade in services. The indirect calculation of these fees as the difference in the values of the goods before and after processing is not recommended as this is generally expected to give low quality results. It could be used, however, as a validation tool or to extend the result to full coverage of the activity;

(f) The design of business surveys should be such that inventories held abroad are explicitly captured. A split between domestic and foreign held inventories is quite helpful;

(g) The identification of actors engaged in merchanting or factoryless goods production may require special attention and methods to detect such cases are highlighted in the Chapter 5 of the Guide;

(h) The activities of expected factoryless goods producers should be examined to decide whether these are genuinely production related (which means the observed company is indeed a factoryless goods producer) or predominantly trade related (which means the company should be considered a trader). The required methods to make this distinction are discussed in the Chapter 5 of the Guide;

(i) The exchange of data between NSIs may help to complete the picture of companies and industries engaged in each of the discussed forms of global production and is therefore recommended.